

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of

The State of Mobile Wireless Competition

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WT Docket No. 11-186

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**REPLY COMMENTS**

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The Wireless Communications Association International, Inc. (“WCAI”), the trade association of the wireless broadband industry, submits these reply comments in this proceeding.

## **I. DISCUSSION**

### **A. Convergence of Communications and Computing Platforms**

Now that the term “convergence” has become passé, it’s finally happening. The distinctions between formerly separate communications networks and devices are blurring. Wired and wireless networks will soon be providing seamlessly integrated services; licensed and unlicensed spectrum are used by the same service provider; the same communications network can simultaneously serve residential, enterprise, and vertical markets; the PC and the TV are becoming indistinguishable; wireless phones are replacing wired phones; tablets are replacing TVs and phones alike; and the smartphone is replacing literally *everything*: With a smartphone, you no longer need a wired phone, a calendar, an address book, a notepad, a clock, a calculator, a camera, a map, a music player, a thermometer, a photo album, a desktop, a newsstand, books, a dictionary, a thesaurus, an encyclopedia set, a video player, board games, a compass, a remote control, a guitar tuner, a tape recorder, etc.

As platforms converge, the nature of the technology used to transmit communications will become increasingly irrelevant to the consumer. Whether video is delivered via over the air broadcast, traditional cable, satellite, IPTV, an over-the-top service accessed via the Internet through a Blu-Ray player, or from the cloud to a smartphone, the consumer’s question will be: What can I do with it? (Where can I see it? What device can I use? Can I transition seamlessly from one location, time, or device to

another? What apps can I use to interact with it? How can I share the experience with someone else?) Imagine a consumer who tires partway through an HD movie on the widescreen at home and goes to bed. During her subway commute the next morning, she swipes her wireless tablet, and the operating system asks whether she would like to continue the movie. She taps the screen and starts watching at the same point she stopped the previous night. No single industry participant or network can seamlessly and consistently provide such services today.

That's changing rapidly. Companies that provide software, operating systems, devices, storage, cloud computing, networks, and content are collaborating to form communications platforms capable of providing truly converged communications services. Converged communications services are consumer-centric: they allow the consumer to select appropriate services, they embrace auto-provisioning, and they offer seamless integration. Domestic wireless networks are a critical component of converged communications platforms within the U.S., but they are only one component of a much larger ecosystem. Providers of operating systems, applications, devices, and content are competing across video, data, and wireless delivery networks on a global basis. This global competition among converging communications platforms is playing a significant role in the state of competition among domestic mobile network operators. New applications and technological development is occurring more rapidly than ever in an environment of increasing traffic volumes and spectrum scarcity. The result is intense, chaotic competition.

## B. Spectrum

Spectrum remains the lifeblood of wireless communications. The Commission's efforts to transition spectrum in the 2.5 GHz, AWS-1, and 700 MHz bands from fixed to mobile use were the catalyst for today's 4G deployments. For example, in a series of orders beginning in the mid-1990's, the FCC began providing licensees offering video services in the 2.5 GHz band with additional operational flexibility.<sup>1</sup> The FCC's efforts to transition the 2.5 GHz band to its highest and best use ultimately led to the restructuring of the band in 2004-2006.<sup>2</sup> As a result of the FCC's flexible approach to the band, 2.5 GHz licensees have been deploying 4G wireless broadband services across the country. WCAI is pleased to report that licensees have largely met their obligation to provide substantial service to the public. These 2.5 GHz licensees achieved this milestone only approximately four years after the FCC adopted a new band plan for mobile broadband services and are now poised to become leaders in the deployment of new TDD LTE network technology. Clearwire's planned TDD LTE network is expected to provide a competitive threat to wireless and wired services.<sup>3</sup>

Licensees in the 700 MHz band are currently deploying FDD LTE, which is also expected to be deployed in the AWS-1 band. Deployment is occurring rapidly in these

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<sup>1</sup> See *Digital Declaratory Ruling*, Declaratory Ruling and Order, 11 FCC Rcd 18839 (1996) (permitting digital transmissions); *Internet Services PN*, Public Notice, 11 FCC Rcd 22419 (1996) (permitting data services); *Two-Way Order*, 13 FCC Rcd 19112 (1998), *recon.*, 14 FCC Rcd 12764 (1999), *further recon.*, 15 Rcd 14566 (2000) (permitting two-way services); *3G Allocation Order*, First Report and Order and Memorandum Opinion and Order, FCC 01-256 (2001) (adding mobile allocation).

<sup>2</sup> *First BRS/EBS Order*, Report and Order and Further Notice of Proposed Rulemaking, FCC 04-135 (2004); *Second BRS/EBS Order*, Order on Reconsideration, FCC 06-46 (2006).

<sup>3</sup> Phil Goldstein, *Clearwire Boosts Stock Offerings, Could Use Cash for Super-Fast TD-LTE*, Fierce Wireless, Dec. 8, 2011, <http://www.fiercewireless.com/story/clearwire-boosts-stock-offerings-could-use-cash-super-fast-td-lte/2011-12-08>.

bands as well: The AWS-1 band was made available in 2006 and the 700 MHz band was made available in 2008.

WCAI supports the efforts of the Commission to build upon its previous success by making more spectrum available for mobile use. The seamless integration of services across converged communications platforms requires operators to provide all subscribers with quality service anywhere and anytime. Exploding demand for throughput on the radio access network, however, is expected to exceed capacity within the next four years.<sup>4</sup> The deployment of LTE technologies and macro-network offload are expected to mitigate the impact of spectrum exhaust, but are not expected to meet the demands of converged communications platforms without additional mobile spectrum. Competition and innovation in the mobile segment depend on spectrum, and more spectrum will be necessary to realize the benefits of convergence.

### **C. Wi-Fi and Small Cells**

The FCC's competition report has historically focused on macro- networks and spectrum allocated for "mobile" use. In this report, however, the FCC should analyze the impact of Wi-Fi hot spots and other small cell network convergence on mobile competition. Wi-Fi offload and small cell deployed are expected to increase significantly in the next several years:<sup>5</sup>

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<sup>4</sup> Comments of Mobile Future, WT Docket No. 11-186, Dec. 5, 2011, at p. 2.

<sup>5</sup> Lynnette Luna, *Operators are Embracing Wifi but Find Solutions Still Lacking*, Fierce Broadband Wireless, Nov. 16, 2011, <http://www.fiercebroadbandwireless.com/special-reports/operators-are-embracing-wi-fi-offloading-find-solutions-still-lacking>.

- Crown Castle International Corp. recently agreed to buy NextG Networks Inc. for about \$1 billion in cash from private-equity firm Madison Dearborn Partners.<sup>6</sup> NextG Networks Inc. has more than 7,000 distributed antenna system sites equipped with optical backhaul that it wholesales to other providers;<sup>7</sup>
- TowerStream is aggressively building Wi-Fi networks to wholesale access to mobile providers;<sup>8</sup> and
- AT&T already offloads mobile traffic from the macro-network to its own Wi-Fi hotspots.

Wi-Fi is also used as a substitute for mobile networks by consumers who are satisfied with portable access. A study published this month indicates that tablet users prefer to connect via Wi-Fi rather than mobile connections due to cost.<sup>9</sup> To the extent these networks are substitutable or complementary to mobile networks, they may act to constrain mobile pricing or provide a competitive advantage and should be considered in an analysis of mobile competition.

#### **D. Network Investment, Innovation, and Entry**

Competition is also fierce in network investment, innovation, and entry. 4G services using WiMAX and HSPA+ technologies are already giving way to LTE networks, with LTE Advanced networks in the planning stages.

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<sup>6</sup> Lauren Pollock, *Crown Castle to Buy NextG Networks for \$1Billion*, WALL STREET JOURNAL, Dec. 16, 2011, [http://online.wsj.com/article/SB10001424052970204553904577102273438566352.html?mod=WSJ\\_Tech\\_LEFTTopNews](http://online.wsj.com/article/SB10001424052970204553904577102273438566352.html?mod=WSJ_Tech_LEFTTopNews).

<sup>7</sup> NextG Networks, Corporate - About Us, <http://nextgnetworks.net/nextg/corporate/about-us.html>.

<sup>8</sup> Lynnette Luna, *Towerstream's Wi-Fi Hotzones See Plenty of Traffic but No Wireless Carrier Customers – Yet*, Fierce Broadband Wireless, Dec. 14, 2011, <http://www.fiercebroadbandwireless.com/special-reports/towerstreams-wi-fi-hotzones-see-plenty-traffic-no-wireless-carrier-customer>.

<sup>9</sup> Shaylin Clark, *Tablet Owners Prefer Wifi to Cellular Data*, WebProNews, Dec. 13, 2011, <http://www.webpronews.com/tablet-owners-prefer-wifi-to-cellular-data-2011-12>.

- Clearwire is planning to build an innovative TDD LTE network in the U.S.
- AT&T has proposed to use new carrier aggregation technology to deploy 700 MHz spectrum it is seeking to acquire from Qualcomm.
- Dish Network plans to build an LTE Advanced network using MSS spectrum. Dish Network's plan offers the potential for new entry and competitive disruption, especially when combined with its ownership of Blockbuster, which has retail stores and a streaming video service.<sup>10</sup>

The rapid deployment of new technologies and the prospects of new entry are evidence of an effectively competitive market.

#### **E. Wholesaling and MVNOs**

Wholesale relationships are enhancing competition by providing mobile operators with opportunities to offer higher quality 4G services than they may be able to provide at retail through their own facilities.

- As noted above, TowerStream is building wholesale offload networks in major markets and Crown Castle is offering micro sites with fiber backhaul.
- FiberTower offers wholesale access to its network resources and millimeter wave spectrum to provide wireless 4G backhaul services.
- Clearwire offers access on a wholesale basis to its 4G network. More than 8 million subscribers access the network's substantial spectrum resources through Clearwire's wholesale partners.

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<sup>10</sup> Phil Goldstein, *Dish's Ergen: Spectrum Will Enable Mobile Video Play*, Fierce Wireless, Nov. 8, 2011, <http://www.fiercewireless.com/story/dishs-ergen-spectrum-will-enable-mobile-video-play/2011-11-08>.

- A potential new entrant, LightSquared, has announced its intention to offer wholesale access to its planned 4G network as well.<sup>11</sup>

The MVNO segment also continues to promote competition and innovation by targeting particular segments and enhancing network utilization.

## **F. Devices and Operating Systems**

Competition among vendors of devices and operating systems for converged communications platforms is also fierce. Competition in this segment of the industry has prompted significant realignment and new entry in just the last few months.

*Google-Motorola:* In September Google announced it is buying Motorola to support the Android platform. Because Motorola manufactures both mobile handsets (primarily used by Verizon Wireless) and video set-top boxes (primarily used by the cable industry), the merger would provide Google with an opportunity to leverage its Android operating system across wireless and wired communications platforms.

*Intel:* Intel announced this month that is combining four of its mobility units into a single Mobile Communications Group. The new Mobile Communications Group will absorb Intel's netbook and tablets division, ultra mobility division, mobile communications division, and mobile wireless division. Intel is scrapping its MeeGo operating system and focusing on Tizen, a Linux-based cross-architecture device software platform. Intel's decision to adopt Tizen was announced after Nokia partnered with Microsoft to support Windows Phone.

*Verizon-Cable:* Verizon Wireless and a group of cable partners have formed a technology joint venture to better integrate wireline and wireless products and

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<sup>11</sup> See <http://www.lightsquared.com/what-we-do/operating-model/>.



services.<sup>12</sup> The unit will also have the ability to license products and services to other cable and satellite service providers.

*HP/webOS*: HP has decided to offer its webOS platform on an open-source basis.<sup>13</sup>

*ZTE*: Chinese vendor ZTE announced plans to release LTE and high-end smartphones in the U.S. next year.<sup>14</sup>

*Sprint-Clearwire*: The companies have agreed to collaborate to support the ecosystem for TDD-LTE devices, chipsets, and standards.<sup>15</sup>

The new entry and realignment activity in this segment is evidence of an effectively competitive market.

#### **G. M2M and Vertical Markets**

Converged communications platforms are breaking down the traditional distinctions among enterprise, residential, and vertical markets.

- This month, Verizon formed a new global business unit spanning both its wireless and wireline operations that will be responsible for all of its business, government, and wholesale operations, including its enterprise mobility devices, cloud and IT, strategic networking and advanced communications offerings, as well as vertical solutions for its healthcare, transportation, retail, utilities,

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<sup>12</sup> Phil Goldstein, *Verizon to Buy Cox's AWS Spectrum for \$315M*, Fierce Wireless, Dec. 16, 2011, <http://www.fiercewireless.com/node/115484>.

<sup>13</sup> Phil Goldstein, *HP to Make WebOS Open Source, Plans WebOS Tablets in 2013*, Dec. 9, 2011, <http://www.fiercewireless.com/story/hp-keep-webos-will-make-it-open-source/2011-12-09>.

<sup>14</sup> Phil Goldstein, *ZTE Promises LTE and High-End U.S. Smartphones in 2012*, Fierce Wireless, Dec. 8, 2011, <http://www.fiercewireless.com/story/zte-promises-lte-and-high-end-us-smartphones-2012/2011-12-08>.

<sup>15</sup> Phil Goldstein, *Sprint, Clearwire Ink Agreements on \$1.6B in Funding, LTE*, Fierce Wireless, Dec. 1, 2011, <http://www.fiercewireless.com/story/sprint-clearwire-ink-agreements-16b-funding-lte/2011-12-01>.

financial services, and IT consulting services.<sup>16</sup>

- AT&T already has a similar business unit and is adding a new digital life services unit for home security, healthcare, and energy.<sup>17</sup>
- Sprint launched an Embedded M2M Solutions site this summer as a resource for decision makers in the segment.<sup>18</sup>

The internal realignments and new business units described above represent a new, more comprehensive approach to converged communications platforms that is creating new competitive opportunities.

#### **IV. CONCLUSION**

The Commission's traditional analysis of competition in the mobile segment – which emphasizes facilities-based services provided by network operators at retail to residential consumers – does not adequately capture the competitive dynamics of converged communications platforms. The convergence of communications and computing platforms, wireline and wireless integration, spectrum exhaust, macro-network offload, rapid technology deployment, wholesale and MVNO relationships in macro and micro radio access networks and the backhaul segment, converged devices and operating systems, and M2M services are all driving chaotic competition in the mobile segment. The Commission should expand its traditional analysis to recognize this changing reality and its impact on mobile competition.

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<sup>16</sup> Phil Goldstein, *Verizon Forges New Wireless-Wireline Enterprise Business*, Fierce Wireless, Dec. 15, 2011, <http://www.fiercewireless.com/story/verizon-forges-new-wireless-wireline-enterprise-business/2011-12-15>.

<sup>17</sup> *Id.*

<sup>18</sup> See <http://embedded-m2m-solutions.tmcnet.com/>.

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